

## FDI and supplier-oriented upgrading in the Czech motor vehicle industry

Rugraff, Eric

Postprint / Postprint

Zeitschriftenartikel / journal article

Zur Verfügung gestellt in Kooperation mit / provided in cooperation with:

www.peerproject.eu

### Empfohlene Zitierung / Suggested Citation:

Rugraff, E. (2010). FDI and supplier-oriented upgrading in the Czech motor vehicle industry. *Regional Studies*, 44(5), 627-638. <https://doi.org/10.1080/00343400903095253>

### Nutzungsbedingungen:

Dieser Text wird unter dem "PEER Licence Agreement zur Verfügung" gestellt. Nähere Auskünfte zum PEER-Projekt finden Sie hier: <http://www.peerproject.eu>. Gewährt wird ein nicht exklusives, nicht übertragbares, persönliches und beschränktes Recht auf Nutzung dieses Dokuments. Dieses Dokument ist ausschließlich für den persönlichen, nicht-kommerziellen Gebrauch bestimmt. Auf sämtlichen Kopien dieses Dokuments müssen alle Urheberrechtshinweise und sonstigen Hinweise auf gesetzlichen Schutz beibehalten werden. Sie dürfen dieses Dokument nicht in irgendeiner Weise abändern, noch dürfen Sie dieses Dokument für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, aufführen, vertreiben oder anderweitig nutzen.

Mit der Verwendung dieses Dokuments erkennen Sie die Nutzungsbedingungen an.

**gesis**  
Leibniz-Institut  
für Sozialwissenschaften

### Terms of use:

This document is made available under the "PEER Licence Agreement". For more Information regarding the PEER-project see: <http://www.peerproject.eu>. This document is solely intended for your personal, non-commercial use. All of the copies of this documents must retain all copyright information and other information regarding legal protection. You are not allowed to alter this document in any way, to copy it for public or commercial purposes, to exhibit the document in public, to perform, distribute or otherwise use the document in public.

By using this particular document, you accept the above-stated conditions of use.

Mitglied der  
  
Leibniz-Gemeinschaft



# FDI and Supplier-Oriented Upgrading in the Czech Motor Vehicle Industry

Journal:	<i>Regional Studies</i>
Manuscript ID:	CRES-2008-0091.R1
Manuscript Type:	Main Section
JEL codes:	F23 - Multinational Firms International Business < F2 - International Factor Movements and International Business < F - International Economics, L23 - Organization of Production < L2 - Firm Objectives, Organization, and Behavior < L - Industrial Organization, L62 - Automobiles Other Transportation Equipment < L6 - Industry Studies: Manufacturing < L - Industrial Organization, P31 - Socialist Enterprises and Their Transitions < P3 - Socialist Institutions and Their Transitions < P - Economic Systems
Keywords:	Czech Republic, motor vehicle industry, foreign direct investment, supplier-oriented industrial upgrading, vertical spillovers



FDI and Supplier-Oriented Upgrading in the Czech Motor Vehicle Industry

ERIC RUGRAFF

Institute of Technology/Bureau d'Economie Théorique et Appliquée (BETA),  
University of Strasbourg, IUT Robert Schuman, 72 route du Rhin, BP.10315, 67411 Illkirch,  
France. Email: eric.rugraff@urs.u-strasbg.fr

Received April 2008, in revised form Oct 2008, accepted Nov 2008

Abstract

The Czech Republic has succeeded in building a new comparative advantage in the motor vehicle and motor component production. Yet the Czech-owned companies only weakly contribute to the Czech upgrading. The Czech-owned companies are totally absent from the first tier suppliers and are only linked by casual technological relationships to foreign-owned multinational subsidiaries. This kind of relationship limits the vertical spillovers from foreign-owned multinational subsidiaries and is responsible for the existence of a weak link in the Czech automotive system that may foster the relocation of foreign-owned subsidiaries in foreign countries.

Czech motor vehicle industry, Upgrading, FDI, Indigenous firms

ERIC

RUGRAFF捷克的对外直接投资 ( FDI ) 以及以供给为导向的机动车产业升级，区域研究。捷克共和国在机动车以及机动车配件领域成功地构建出了新的比较优势。然而捷克本土企业对于捷克产业升级的贡献却微乎其微。捷克本土企业彻底从首级供应商领域中退出，仅与外资跨国公司之间保持常规的技术联系。这种联系制约了外资跨国企业在纵深方向的发展，同时也导致捷克机动车产业体系内部联系微弱，进而潜在地促成了外资向他国的转移。

捷克机动车产业    升级    对外直接投资 ( FDI )    本土企业

Résumé (title to follow, have contacted author, Roos)

La République tchèque a développé avec succès son avantage comparatif dans la construction et les équipements automobiles, alors même que les firmes à capitaux tchèques n'ont que faiblement contribué à la remontée de filière. Les firmes à capitaux tchèques sont totalement absentes du groupe des équipementiers de premier rang et sont faiblement connectées aux filiales des firmes multinationales. L'absence de relations partenariales réduit les externalités. Les firmes à capitaux locaux sont le chaînon faible dans le système automobile tchèque. Avec un faible enracinement local, les firmes multinationales pourraient plus facilement songer à re-localiser leurs activités.

Industrie automobile tchèque, Remontée de filière, IDE, Firmes à capitaux locaux

**Ausländische Direktinvestitionen und lieferantenorientierte Aufwertungen in der tschechischen Automobilindustrie**

ERIC RUGRAFF

Der Tschechischen Republik ist es gelungen, sich einen neuen komparativen Vorteil bei der Herstellung von Automobilen und Motorkomponenten aufzubauen. Allerdings tragen die Firmen in tschechischem Eigentum nur in geringem Ausmaß zur Aufwertung Tschechiens bei. Firmen in tschechischem Eigentum sind unter den First-Tier-Lieferanten überhaupt nicht vertreten und mit multinationalen Konzerngesellschaften in ausländischem Eigentum nur im Rahmen gelegentlicher technischer Beziehungen verknüpft. Diese Art von Beziehung begrenzt die vertikalen Übertragungen von multinationalen Konzerngesellschaften in ausländischem Eigentum und ist für eine Schwäche der tschechischen Automobilindustrie verantwortlich, die die Abwanderung ausländischer Konzerngesellschaften ins Ausland begünstigen könnte.

Keywords:  
Tschechische Automobilindustrie  
Verbesserung  
Ausländische Direktinvestitionen  
Einheimische Firmen

IDE y mejoras de proveedores en la industria checa de vehículos motorizados

Eric Rugraff

La República Checa ha conseguido con éxito crear una nueva ventaja comparativa en la producción de vehículos de motor y de componentes de motores. Sin embargo, las empresas en manos checas solamente contribuyen débilmente al auge del país. Las empresas de propiedad checa están totalmente ausentes para proveedores de primera línea y sólo están vinculadas con filiales multinacionales de propiedad extranjera por relaciones tecnológicas casuales. Este tipo de relación limita los desbordamientos verticales de las filiales multinacionales de propiedad extranjera y es responsable de un punto débil en el sistema automotriz checo que podría fomentar la reubicación de filiales de propiedad extranjera en países extranjeros.

Keywords:  
Industria checa de vehículos motorizados  
Mejora  
IDE  
Empresas autóctonas

JEL Classifications: F23, L23, L62, P31

## INTRODUCTION

This paper attempts to demonstrate that the Czech Republic has succeeded in building a competitive motor vehicle industry in less than two decades, although the Czech-owned firms have only marginally contributed to this success. The Czech motor vehicle recovery is due to the massive foreign direct investments (FDI) which flooded into the country and deeply restructured the local industry. In the 1990s all the Czech motor vehicle manufacturers were overtaken by multinational companies and from 1998 onwards the Czech Republic implemented a liberal foreign-direct-investment framework in order to accelerate foreign participation of component suppliers. In the Czech development strategy, foreign-owned multinational subsidiaries have been seen as the central vector able to trigger a supplier-oriented industrial upgrading. Moreover, since the motor vehicle industry has had idiosyncratic characteristics that should facilitate the diffusion of vertical spillovers, most firms in the sector should be encompassed in the upgrading process. Indeed, the weight and size of thousands of sophisticated components and materials oblige the manufacturers, but also the component suppliers, to source, at least partially, some inputs locally. At the same time, the Czech Republic has a long-standing car-building tradition which should facilitate local sourcing.

According to the industrial economics and economic geography tradition, the paper suggests that foreign-owned multinational subsidiaries will cause vertical spillover if they source locally, especially if they develop close relationships with the indigenous suppliers. Yet a new production and organization paradigm emerged in the 1980s in the motor vehicle industry that led to a deep reconfiguration of the multinational-developing country relationship. Motor vehicle manufacturers have delegated a growing share of activities to a core group of highly competent first tier suppliers who have progressively become ‘mega-

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

suppliers’. With this paradigmatic change, the automotive system, though always hierarchized, has transformed into a highly hierarchical structure, with on the one hand, a limited number of systemic suppliers actively cooperating with the motor vehicle manufacturers on a world scale and, on the other hand, suppliers having only very casual relationships with them.

In order to highlight the position of the Czech-owned automotive component suppliers in the motor vehicle industry, the paper evaluates the position of indigenous suppliers in the local procurement and the ‘closeness’ of the relationships linking the foreign-owned multinational subsidiaries to indigenous suppliers. The main empirical section of the paper is based on the compilation of a Czech database which contains information about 506 automotive component suppliers. The database has been complemented by annual reports of the Czech-owned and multinational companies. On the base of the analysis of the 173 main component suppliers and a detailed case study of the ten major Czech-owned suppliers, the paper suggests that the foreign-owned multinational subsidiaries are in a totally dominant position and that Czech-owned firms have only casual technological relationships with foreign-owned multinational subsidiaries. The paper suggests that the weakness of the Czech-owned suppliers fragilizes the Czech automotive system and increases the risk of the relocation of activities in foreign countries.

CZECH FDI POLICY AND THE MOTOR VEHICLE INDUSTRY

The initial choice in the Czech Republic

Czechoslovakia developed a car-making tradition during the communist period with the companies Skoda, Tatra and BAZ. Yet the quality of the production of motor vehicles and components was low compared to the Western standard. The sector emerged at the beginning of the 1990s with severe weaknesses: a low capacity for innovation, a weak productive efficiency, a quality and variety of products insufficient to be exported and a low level of specialization coming from the production of a large range of products not related to automotive production (PAVLINEK, 2002, 2005; COURTAUX-KOTBI, 2005; FAVA, 2005). The number as well as the size of the motor vehicle companies reflected political priorities and did not correspond to the criteria of economic efficiency to be found in developed market economies. During the communist period the automotive production system was totally distorted: in ex-Czechoslovakia the degree of centralization was so high that an 'inverse pyramid' was built with a limited number of very large organizations and a shortage of small and medium-sized firms (ECONOMIC COMMISSION FOR EUROPE, 1994, p. 185). The restructuring of state-owned enterprises, meaning the creation of viable companies capable of competing in a market environment, has been much more difficult than expected. The production drop in the first half of the 1990s and the institutional instability has led a majority of privatized enterprises, feeling that they had 'no chance' under the market conditions, to choose a survival strategy (ICKES and RYTERMAN, 1993): the management and employees engaged in a coalition aiming to limit lay-offs as long as possible and to postpone the indispensable reforms.

The Czech Republic opted at the beginning of the 1990s for a rapid liberalization of the economy and the integration into world trade. Yet the technological gap between the West and the Czech Republic was too wide to sell Czech motor vehicles on the international market. Therefore the policymakers decided to privatize the main motor vehicle manufacturers rapidly. Volkswagen was authorized to invest in Skoda in April 1991 by



creating a joint venture with the Czech state which initially kept 61% of Skoda's capital. The Czech government agreed to reduce its share progressively and in 2000 Skoda belonged 100% to the Volkswagen Group. The Government also sold the commercial vehicle producers Tatra and Avia (heavy trucks), and Karosa (buses) to foreign investors during the 1990s. Although all the motor vehicle manufacturers were sold to foreign investors, the country did not apply an 'open door policy' to foreign investors during the period 1991-1998. Compared to other Central European countries such as Hungary and Poland, the Czech Republic sold a limited number of large state companies to foreign investors. The incentive policy also was relatively restrictive compared to other transition countries: the Czech Republic offered incentives depending on each particular situation and they were subject to governmental approval. Over this period, the country privileged voucher privatization, by which the national assets were transferred initially to the citizens, who then transferred them to Investment Privatization Funds. An overwhelming part of these funds were managed by banks in which the state participation was still dominant. These state-owned banks provided firms with cheap credits allowing them to postpone the indispensable restructuring. This explains the disappointing economic performance in the 1990s (OECD, 1998). In 1998, the solution of a balanced development path which aimed at attracting a limited number of foreign investors and fostering the emergence of a national industry was abandoned.

The turning point in 1998

From 1998 onwards the policymakers decided to implement a liberal-FDI policy in order to accelerate the industrial recovery and improve the macroeconomic performances. FDI restrictions were dramatically reduced<sup>1</sup> inducing massive Greenfield investments and contributing to the acceleration of the takeover by foreign investors of the least under-efficient

large Czech privatized companies. The shift in Czech behavior towards FDI was accompanied by the implementation of regulatory reforms in order to be more conducive to product market and labor market competition (OECD, 2005, p. 142). In 2000 a package of incentives was offered to come in line with the other regional competitors for inward investments.

The effects of the new FDI-policy have been the most visible in the motor vehicle industry. The total stock of FDI in the motor vehicle industry rose from €0.8 billion in 1998 to €5.6 billion in 2006, which represented a quarter of the FDI stock in the Czech manufacturing sector (CESKA NARODNI BANKA, 2000, 2007). The country successfully attracted two main industrial projects: a joint venture between Toyota and Peugeot Citroën (the agreement was signed in 2002) which led to the construction of a common plant in Kolin-Ovcary (the production of Peugeot 107, Citroën C1 and Toyota Aygo started in 2005); Hyundai plans to invest €1 billion in Nosovice in order to produce around 200 000 cars a year as from and after March 2009. Global automotive component suppliers like Bosch, Johnson Controls, Visteon, Valeo, Siemens, Continental (Table 1) also increased their investments at the end of the 1990s in order to supply the Skoda and Toyota-Peugeot Citroën plants and to use the country as an export-platform of components to Central Europe and the rest of Europe.

TABLE 1.

As a consequence of the massive foreign investments, the Czech Republic has progressively emerged as the leading country of motor vehicle production in Central and Eastern Europe. In 2006 of all the new members of the EU, the Czech Republic produced 36.2% of the motor vehicles. The automotive industry contributes massively to the Czech economic performances: it totals 19.3% in receipts from sales from all branches of manufacturing industry, 10.3% of the employment in the manufacturing sector and represents

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

17.9% of the Czech exports (MINISTRY OF INDUSTRY AND TRADE, 2007). Table 2 highlights the acceleration of the production since the beginning of the 2000s due to the massive foreign investments. The value added has soared and the number of employees has increased sharply. The growing export-orientation of the vehicle industry clearly demonstrates that the Czech Republic has become an export base for vehicles and accessories. In 2006, almost two-thirds of the automotive components were exported and Skoda was the largest Czech exporter (MINISTRY OF INDUSTRY AND TRADE, 2007, p. 298). Beside its specialization in the car production, the country has developed a new comparative advantage in the manufacture of accessories for motor vehicles. The sector has created 29 000 new jobs over the last six years and the net balance has increased by 250% over the same period.

TABLE 2

CZECH UPGRADING STRATEGY

The backward vertical spillover potential of foreign-owned multinational subsidiaries

Multinational companies' subsidiaries have been indisputably contributing to the Czech upgrading strategy (see Tables 1 & 2 and *infra*). Yet the success of an upgrading strategy is also related to the catalyst effect of these subsidiaries on the local industry and especially to the backward vertical knowledge and pecuniary spillovers, whereby foreign-owned companies increase the productivity of local suppliers linked to them in the production chain. Indeed, since foreign-owned multinational subsidiaries want to prevent information and technology from leaking over to potential local competitors, spillover is more likely to be vertical than horizontal in nature (JAVORCIK, 2004). Backward vertical spillovers should

1  
2  
3 have the highest catalyst impact. MARKUSEN and VENABLES (1999) present a model in  
4  
5 which foreign-owned multinational subsidiaries generate derived demand for intermediate  
6  
7 goods leading to the extension of the intermediate goods sector in the host country. In  
8  
9 RODRIGUEZ-CLARE's model (1996) the catalyst impact emerges through the production by  
10  
11 foreign-owned multinational subsidiaries of complex goods that require the production by  
12  
13 domestic companies of specialized intermediate inputs.  
14  
15

16  
17 The catalyst effect may result from direct knowledge transfer from foreign-owned  
18  
19 multinational subsidiaries to indigenous suppliers when the former:  
20  
21

- 22  
23 - provide technical assistance to their suppliers;  
24  
25 - demand higher requirements regarding product quality, obliging indigenous companies to  
26  
27 upgrade their technological capacities by investing in new technology and management  
28  
29 practices;  
30  
31 - improve the human capital of employees who create companies or move over to  
32  
33 indigenous companies;  
34  
35 - force indigenous companies, as a result of competition, to reduce their inefficiency and to  
36  
37 adopt new production methods and management practices.  
38  
39  
40  
41

42 The strengthening of the industrial upgrading may also be triggered by pecuniary  
43  
44 spillovers -vertical linkages- which are emerging through increased demand for intermediate  
45  
46 products addressed to local companies raising their economies of scale and delivering cheaper  
47  
48 products to local buyers.  
49  
50

51  
52  
53  
54 The backward vertical spillover potential in the motor vehicle sector  
55  
56

57  
58  
59 The motor vehicle industry offers idiosyncratic characteristics that explain the Czech  
60  
preference for an FDI-led supplier-oriented upgrading strategy. The catalyst effect is

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

potentially strong due to the fact that a motor vehicle is a sophisticated product that is made up of thousands of parts and components: a small car is made up of 15 000 parts and a luxury car necessitates between 25 000 and 30 000 parts. The motor vehicle manufacturers do not possess the know-how to internalize all the operations and generate de facto vertical spillovers by buying products from suppliers. Moreover, the weight and size of components and materials oblige the carmakers to source, at least partially, at the local level. Economists and geographers have demonstrated that car production is mostly organized on a national or regional basis (Europe, North America, etc.) owing to the complexity of the product as well as the regional (or even national) differences in consumer tastes and transportation costs that tend to foster the geographical proximity of the plants (FRIGANT and LUNG, 2001; LAYAN, 2003; LUNG, 2003). The necessity to source at least some inputs locally gives the opportunity to local companies of becoming component suppliers of foreign-owned multinational subsidiaries. Spillovers may result from the need to buy some large or weighty parts from suppliers located in the near proximity of a foreign-owned multinational subsidiary.

Moreover, in low-technology and labor-intensive industries such as footwear, clothing or furniture, the necessity to coordinate the ‘production plans’ of a foreign-owned multinational subsidiary and of his suppliers is limited: the different parts of the product are relatively simple and the assembly process is not complex. In the motor vehicle industry the quality of the final product does not only depend on the quality of the different parts and components but also on the motor vehicle manufacturers’ capacity to manage the coordination of their production process with that of their suppliers. Motor vehicle manufacturers are therefore stimulated to exchange information, management practices and know-how with their suppliers. They may even provide their suppliers with assistance programs aiming to increase the quality of the coordination and the quality of production.

1  
2  
3 A superficial evaluation of the sourcing figures of the foreign-owned motor vehicle  
4 manufacturers in the Czech Republic could lead one to believe that vertical backward  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
A superficial evaluation of the sourcing figures of the foreign-owned motor vehicle manufacturers in the Czech Republic could lead one to believe that vertical backward spillovers from multinationals' subsidiaries to the indigenous suppliers are large. Indeed, in 2006 Skoda auto bought 62.6% of their inputs in the Czech Republic (SKODA AUTO ANNUAL REPORT, 2006, p. 31) and Toyota-Peugeot Citroën Automobile a rough 80% (TPCA ANNUAL REPORT, 2006). A comparison of the Czech figures with other countries is a risky task. In some countries local content requirements artificially increase the local sourcing ratio, whereas the degree of internalization of the production influence the outsourcing level of manufacturers and the amount of inputs bought from suppliers.<sup>2</sup> Yet the local sourcing ratio in the Czech Republic stands indisputably among the highest of the developing and the transition economies. A comparison with Hungary which presents many common features with the Czech Republic (number of inhabitants, FDI-led transformation process, priority given to the automotive sector, etc.) provides an interesting result: the local content of the main motor vehicle manufacturers –Toyota, Opel (engines) and Audi (engines)- is much lower than in the Czech Republic (HAVAS, 2004, p. 6-11).

Volkswagen's sourcing practices have played a leading role in the sourcing pattern in the Czech Republic. Since 1992 Skoda have purchased over two-thirds of their purchasing total in the Czech Republic (SKODA AUTO ANNUAL REPORTS, 1993 to 2006). The initial deal with the Czech government included Volkswagen's commitment to source from Czech suppliers for a certain time and to further develop the component industry (VAN TULDER and RUIGROK, 1998, p. 27). This agreement provided the suppliers with time to reorganize their activity by importing capital equipment and by buying know-how in the form of patents or licenses from Western countries. Yet Volkswagen mainly encouraged indigenous production in order to accede to less sophisticated and less expensive components and to take advantage of their bargaining power in their relationship with small- and medium-sized

indigenous companies (PAVLINEK, 2005, p. 86). By being in a dominant position with regard to local component producers, Volkswagen-Skoda easily imposed their requirements. In Volkswagen's European labor division, Skoda have specialized in the mass production of small and cheap cars for which competition is fierce and margins are small (LAYAN, 2003), although Volkswagen also allowed Skoda to produce upper-medium cars (PAVLINEK, 2003, p. 205).

In the next section we will demonstrate that although the foreign-owned multinational subsidiaries abundantly source in the Czech Republic they purchase only a limited share of their inputs from Czech-owned suppliers.

#### POSITION OF THE INDIGENOUS SUPPLIERS IN THE MOTOR VEHICLE INDUSTRY

With the emergence of US, European and Japanese mega-suppliers in the automotive industry who come with motor vehicle manufacturers wherever they may be (STURGEON and LESTER, 2003), the questions of ‘who provides the local content?’ and ‘what is provided by whom?’ become of central importance for the understanding of the upgrading dynamic of a country highly specialized in the automotive activity such as the Czech Republic.

In order to evaluate the position of the Czech-owned automotive component suppliers in the motor vehicle industry, we compiled the database of CZECHINVEST (2008) which contains information about 506 manufacturing companies for which component production is one of their main activities (the data was collected in 2002-2003). CZECHINVEST has classified the suppliers in three tiers based on the intensity of their relationship with motor vehicle manufacturers. We worked exclusively on the so-called ‘first tier suppliers’ category, made up of 182 companies. Most of these companies are suppliers for Skoda and Toyota-

1  
2  
3 Peugeot Citroën Automobile but also for manufacturers located in other Central European  
4 countries and in the rest of Europe. Yet the definition of 'first tier suppliers' of  
5 CZECHINVEST does not strictly correspond to the usual definition. In the usual definition,  
6 the 'first tier suppliers' category corresponds to a very small number of systemic suppliers  
7 who deliver complex components directly to the final assembly line of the manufacturers  
8 (STURGEON and LESTER, 2003). In the CZECHINVEST classification, the 'first-tier  
9 suppliers' category is made up of every company that provides products –even if it represents  
10 only a very small share of their turnover- directly to motor vehicle manufacturers. The  
11 database contains small-sized companies which provide only few products, such as tools for  
12 example, to the manufacturers. This explains why the number of first tier suppliers in our  
13 study is much higher than the number we would have if we only retained the systemic  
14 suppliers. It also explains why we excluded from the study tier-two and tier-three suppliers  
15 (they are only weakly and indirectly connected to the motor vehicle manufacturers). The  
16 missing information such as the turnover and the nationality of the dominant shareholders was  
17 found in the Annual Reports of the companies.

18  
19 In Figure 1 we classified the 173 first tier suppliers for who no information was missing  
20 based on the nationality of the dominant shareholder<sup>3</sup> (foreign versus Czech-owned) and the  
21 companies' size (small- and medium-scaled companies under 500 employees versus large  
22 companies over 500 employees).

23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
  
FIGURE 1



1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

Figure 1 shows that the Czech-owned companies represent half of the suppliers but only one-fifth of the employees. The advantage of the foreign-owned companies is even more obvious when we focus our attention on the large companies (over 500 employees). The large Czech-owned companies only represent a rough 5% of the 173 companies and 10% of the 91 202 employees. The Czech activity is concentrated on small- and medium-scale operations whereas foreign-owned operators privilege large-scale activities. The Western mega-suppliers have crowded out the large Czech companies either directly by buying them or indirectly by replacing them in the supplier group of the motor vehicle manufacturers obliging them to drastically reduce their production. An overwhelming part of the largest Czech companies survived (e.g. Magneton Kromeriz, Barum continental, PAL Praha, Kablo Velke Mezirici) and were overtaken by foreign investors. Few of them disappeared. A handful of companies survived and stayed in Czech hands: in the mid-2000s only ten large automotive component suppliers belonged to Czech shareholders (Table 3). These ten companies were already producing motor vehicle components during the communist period and, in order to survive, had to reduce massively the number of employees. Today they belong to the large-companies category (over 500 employees), but their average size is much lower than the average size of the foreign-owned multinational subsidiaries (921 employees versus 1547). Moreover, since the early 1990s not a single Czech-owned newcomer has succeeded in integrating the large-firm automotive component sector. The absolute domination of the large-scale activities by foreign-owned suppliers has prevented new Czech companies from integrating the sector.

The foreign investors cherry-picked the best Czech suppliers in the 1990s in order to eliminate potential rivals and to continue to supply the manufacturers: Magneton Kromeriz (approximately 6000 employees in 1989), Barum (3700 in 1989), PAL Praha (2000), Kablo Velké Mezirici (1600), Metal Usti, FAB, which were part of the 20<sup>th</sup> century Czechoslovakian-motor-vehicle-tradition, have been taken over by foreign investors. The

Western mega-suppliers have also massively invested through Greenfield operations. 15 US and 14 German global suppliers have subsidiaries of over 500 employees in the Czech Republic. The US automotive component suppliers Visteon (4500 employees in the Czech Republic in mid-2000), Delphi (3350), Johnson Controls (3070), TRW (2170), Tyco (2000), Alcoa (1670), Parker Hannifin (1200) and the German Bosch (7190 employees), Continental (5330), Siemens VDO (2400), CGS (2200), Peguform (1800), Kostal (1500), Automotive lighting (1500) belong to the country's leading companies. Even world-leading Japanese companies such as Denso and TRCZ have located production facilities in the Czech Republic.

#### THE RELATIONSHIPS BETWEEN THE FOREIGN-OWNED MULTINATIONAL SUBSIDIARIES AND THE INDIGENOUS SUPPLIERS

We have demonstrated in the former section that foreign-owned manufacturers and suppliers clearly dominate the Czech motor vehicle industry although some Czech-owned suppliers, essentially of small and medium size, have survived. According to the work of several scholars in the field of industrial economics and economic geography (DICKEN, 1988; FRIGANT and LUNG, 2001; KRISTENSEN and ZEITLIN, 2005), we estimate that the 'closeness' of the relationship between foreign and indigenous companies will determine the multinationals subsidiaries' spillovers into the host economy and consequently the solidity of the upgrading process.

The new organization paradigm in the motor vehicle industry

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

At the beginning of the 1980s the Western motor vehicle manufacturers realized that they were less competitive than the Japanese manufacturers and decided to engage in a total reorganization of their model of production.<sup>4</sup> Western manufacturers, who were more vertically integrated than their Japanese counterparts, engaged in an externalization process and developed more cooperative and structured relationships with component suppliers (STURGEON and LESTER, 2003). This evolution led to a progressive reduction in employment for the motor vehicle manufacturers and an increase in the component suppliers' production and employment. At the same time, the adoption of lean manufacturing (WOMACK et al., 1990) led to some clustering of activities in the motor vehicle sector. The just-in-time delivery that motor vehicle manufacturers require is one reason why many suppliers have been adopting right-next-door strategies when deciding where to locate their manufacturing plants. Proximity improves the quality of inter-firm coordination (GILLY and TORRE, 2000). The positive effects of industrial cooperation between companies are largely documented in industrial economics (RICHARDSON, 1972; AOKI, 1988). AOKI (1988) for example argues that cooperative relations give rise to a relational quasi-rent, which is the inter-firm form of the organizational quasi-rent created in the Japanese firm. The quasi-rent is a result of the informational efficiency of the operational coordination between a prime manufacturer and his subcontractors. The quasi-rent is partially due to the employee's contextual skills. The informational efficiency is unique and creates relation-specific economic returns. In the context of a long-term relationship, partners are encouraged to engage in relation-specific investments in expertise, equipment and R&D. The relationship is quasi-permanent; the prime manufacturer would lose the quasi-rent if he decided to internalize the subcontractor's activity, whereas in a pure market-operation the subcontractor would not invest in relation-specific activities. The consequences for vertical spillover is obvious: Western or Asian motor vehicle manufacturers who invest in less developed

1  
2  
3 countries source a higher share of their inputs in the host country than they used to do some  
4  
5 decades ago.  
6  
7

8 Yet the growth of outsourcing has led to a deep transformation in the supply system. The  
9  
10 motor vehicle system has always been organized hierarchically. But in recent years it has  
11  
12 transformed to a highly hierarchical structure where each manufacturer relies on a core group  
13  
14 of highly competent first tier suppliers to whom new responsibilities on research, design,  
15  
16 manufacturing and assembly have been delegated (GEREFFI, 1999; LUNG, 2003). This new  
17  
18 division of labor between manufacturers and component suppliers has created new business  
19  
20 opportunities and generated a surge in merger and acquisition which has dramatically reduced  
21  
22 the number of suppliers (VOLPATO, 2003, p. 25). This has led to the rise of mega-suppliers  
23  
24 able to co-locate and co-produce with their customers on a global scale and to progressively  
25  
26 assume prime responsibility for selecting lower tier suppliers and coordinating their activity.  
27  
28 The 'motor vehicle manufacturers-automotive component suppliers' relationship has  
29  
30 progressively split into two complementary behavioral models: the 'Voice' behavioral model  
31  
32 and the 'Exit' model (the 'Voice' and 'Exit' conceptions are rooted in the work of  
33  
34 HIRSCHMAN, 1970). The Voice/Exit scheme has been initially developed by HELPER  
35  
36 (1990) and HELPER and SAKO (1995) in a comparative perspective of the automakers'  
37  
38 subcontracting system in the US and in Japan, whereby a customer may respond to a problem  
39  
40 with his suppliers in two ways: Exit, whereby the customer's response to a problem with a  
41  
42 supplier is to find another supplier, and Voice, whereby the response is to work with the  
43  
44 supplier until the problem is solved.  
45  
46  
47  
48  
49  
50  
51  
52

53 The 'Voice' behavioral model characterizes the relationships between motor vehicle  
54  
55 manufacturers and their first tier suppliers. An overwhelming part of the manufacturers and  
56  
57 the first tier suppliers are Western and Japanese mega-companies. The interaction between  
58  
59 them aims at consolidating their partnership on a world scale. They exchange know-how and  
60

information and organize a common development of parts of the motor vehicle. The extension of the suppliers' area of responsibility along the supply chain reinforces the existence of collaborative relations. The drive toward modularity –by which a supplier does not only produce parts but is responsible for the production of a range of parts forming a module of the vehicle– reinforces the intensity of the collaboration between a motor vehicle manufacturer and a supplier (FRIGANT and LUNG, 2001). Close relationships even generate co-locations, with the localization of the supplier's productive facility inside or on the same site as the assembly plant.

The 'Exit' behavioral model is based upon the interchangeability of suppliers depending on their capacity to satisfy needs expressed in any single case by motor vehicle manufacturers and first tier suppliers (VOLPATO, 2003, p. 21). Manufacturers and the mega-suppliers privilege arm's-length relationships with lower tier suppliers in order to cut costs and benefit from competitive switching. First tier suppliers, as in the case of motor vehicle manufacturers, focused on their 'core competencies' (PRAHALAD and HAMEL, 1990) and abandoned the rest to lower tier suppliers. Small- and medium-sized lower tier component suppliers have taken over the high volume production of simple components which is based on low labor costs and a high flexibility. Indigenous companies are typically specialized in the production of simple automotive components in developing countries (SALERNO et al., 1998; BARNES and KAPLINSKY, 2000) and in transition countries (PAVLINEK, 2003, 2005). In the 'Exit' model, information and technology exchanges between foreign-owned companies and the lower tier suppliers are poor and the former can save the costs of explicit assistance. Buyers want to maintain fluid relationships and easily connect to and disconnect from the suppliers.

The consequence of the above stylized facts for the Czech-owned suppliers is obvious: in order to increase the benefit from vertical spillovers, Czech-owned suppliers must be able to co-design, co-produce and co-locate with the major manufacturers and first tier suppliers on

the world scale or at least on a regional scale. Unfortunately the Czech-owned suppliers are neither innovation-oriented nor internationalized. This explains that the manufacturers do not really have the choice between the two forms of behavior in their relationships with indigenous suppliers. Since the Exit/Voice terminology only really makes sense when agents can use both forms and choose one of them, in the next section focusing on the Czech motor industry we will use a terminology that refers to the organizational form of the relationship.

### The specialization of the Czech-owned suppliers

We have evaluated the Czech suppliers' innovative capacities by benchmarking the Czech-owned to the foreign-owned companies' value added and the Czech internationalizing potential by looking at the Czech FDI stock abroad in the motor vehicle industry. The value added (total turnover/total number of employees) of the Czech-owned companies amounts to €44 888 as opposed to €99 007 for the foreign-owned companies in the mid 2000s (Figure 1). The massive difference between the two sets of companies tends to demonstrate that indigenous suppliers are specialized in 'price-driven subcontracting' whereas foreign-owned companies are engaged in 'design-driven subcontracting' (BEST, 1990). Moreover the Czech companies fail to internationalize. In 2006 the Czech FDI stock abroad of the motor vehicle industry stood at €7 million and represented only 0.1% of total Czech FDI stock abroad (CESKA NARODNI BANKA, 2007). These two figures clearly demonstrate that the Czech companies of the automotive industry have not invested abroad, suggesting that they have not the capacity to co-locate and co-design with their customers on a global scale.

On a micro-level, the comparison of the ten major Czech-owned suppliers (over 500 employees) with the two major foreign-owned component suppliers in the Czech Republic confirms the huge differences in the R&D, design and internationalization fields (Table 3).

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

The ten Czech-owned suppliers are specialized in the production of parts and tools of good quality.<sup>5</sup> However, they do not possess the financial, managerial and technological capacities to produce sophisticated modules and sub-systems and to participate in R&D and design. Their R&D potential is poorly developed, although some companies like the Brano Group have a real activity focused on applied research (Table 3). Although the ten Czech-owned companies are export-oriented, they remain poorly internationalized. Only one of the ten Czech-owned companies possesses two production facilities abroad, compared to a world total of 120 and 36, respectively for the automotive system division of Bosch and Continental (Table 3).

TABLE 3

The empirical evidence suggests the emergence of a highly hierarchical automotive component sector in the Czech Republic. All the systemic suppliers are foreign-owned suppliers while the Czech-owned suppliers, although they sell some products to the motor vehicle industry, belong to the lowest tiers. Partnerships which characterize the relationships between manufacturers and their first tier suppliers concern exclusively foreign-owned multinational subsidiaries while arm’s length relationships characterize the carmakers/first tier suppliers relationships with their Czech counterparts. The absence of strong partnerships between foreign-owned multinational subsidiaries and indigenous suppliers considerably limits spillovers from FDI to the indigenous industrial sector. Foreign-owned manufacturers and suppliers no longer need to improve local capabilities by providing technical assistance to the indigenous suppliers since it is easy to find tailor-made products by foreign counterparts



1  
2  
3 who have invested massively in the Czech Republic and with whom they are engaged in  
4  
5 partnerships. In Market relationships, indigenous suppliers neither benefit from transfer of  
6  
7 skills and technologies from the motor vehicle manufacturers or from the foreign-owned  
8  
9 suppliers, nor from direct help to market their products abroad. Their relationships with  
10  
11 foreign-owned multinational subsidiaries are highly exposed to market fluctuations, cost and  
12  
13 price considerations, whereas suppliers from transition countries need time to acquire new  
14  
15 capacities and to progressively internationalize. With the presence of mega-suppliers engaged  
16  
17 in partnerships with the manufacturers in the Czech Republic it becomes increasingly difficult  
18  
19 for indigenous companies to climb up the value-added scale.  
20  
21  
22  
23  
24  
25  
26

#### 27 The Achilles' heel of the Czech upgrading process

28  
29  
30  
31

32 The upgrading has been essentially realized through the development of the multinationals'  
33  
34 subsidiaries capabilities. They have dramatically improved the quality standards thanks to the  
35  
36 integration of new technologies and management practices. Subsidiaries have also  
37  
38 progressively increased their autonomy vis-à-vis the head company as well as the research &  
39  
40 development activities (CZECHINVEST, 2007). Yet the automotive sector must be seen as  
41  
42 forming a system. Its global competitiveness depends on all the actors of the system, and poor  
43  
44 vertical spillovers are responsible for the existence of a weak link in the Czech chain.  
45  
46 Regarding CARRILLO and GOMIS' (2001) work on the Maquiladoras in Mexico, one may  
47  
48 consider that the more the Czech automotive industry is technology-, innovation- and  
49  
50 qualified labor-oriented, the better it is prepared to confront competitive pressure. An  
51  
52 innovative-oriented system may more easily resist to external shocks such as the entry of new  
53  
54 competing countries or downturns in the Western economy (especially in the German  
55  
56 market), but also to internal shocks such as an increase in labor costs or changes in the FDI  
57  
58  
59  
60



1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

policy. If, in the long term, the only main advantage of Czech-owned suppliers remains based on non-specific capacities such as cheap labor and low cost production, foreign-owned subsidiaries may decide to relocate the production in country with lower labor costs such as Romania, or even move further East. Moreover, specialization in a low-value added production may lock the country in a peripheral position in the European automotive complex. In comparison with purely domestic firms, companies with cross-border operations should be relatively flexible. They have an enhanced ability to shift production between various locations within the firm. Only few studies have examined whether foreign-owned plants are really more likely than indigenous plants to exit the domestic market. Yet, two main studies tend to support this view. GÖRG and STROBL (2003) find that in the Irish manufacturing sector foreign majority-owned plants are more likely to exit than indigenous companies. BERNARD and SJÖHOLM (2003), using data from 1975-1989 for the Indonesian manufacturing sector (controlling for size and productivity) consider that foreign-owned plants are 20% more likely to close than domestic plants. The presence of foreign owners substantially decreases the plant survival rate.

CONCLUSION

The bulk of the empirical literature related to the motor vehicle industry tends to suggest that with globalization the room for locally-owned component suppliers in developing countries and transition economies has decreased. In the Czech Republic also, a limited number of Western mega-suppliers forming the top of a highly hierarchized system co-design, co-produce and co-locate with the motor vehicle manufacturers, leaving little room for the lower tier indigenous suppliers. The Czech-owned suppliers have been cornered in a system of

1  
2  
3 'price-driven subcontracting' and have failed to produce innovative-intensive products and to  
4  
5  
6 localize production facilities abroad. The Czech-owned companies are totally absent from the  
7  
8 first tier suppliers and are only linked by casual technological relationships to foreign-owned  
9  
10 multinational subsidiaries. This kind of relationship has limited vertical spillovers of foreign-  
11  
12 owned multinational subsidiaries on the indigenous industry. The weakness of the Czech-  
13  
14 owned companies drags the competitiveness of the Czech automotive system down, increases  
15  
16 the risk of relocations of plants in other countries and locks the Czech automotive complex in  
17  
18 a peripheral position. The policies of the Czech government, inspired by the Irish and the UK  
19  
20 experiences, aiming at developing high value added supply chains in key sectors such as the  
21  
22 automotive sector have now to go a step further. The Czech government encourages the  
23  
24 different forms of cooperation between Czech and foreign entities, whether they are  
25  
26 companies, universities or research institutes. Yet, although partnerships have emerged, the  
27  
28 relationships with the local actors are still shaky. Unfortunately, there is no consensus among  
29  
30 scholars and practitioners on the best solution to foster the emergence of innovative firms in  
31  
32 Central Europe. Is it simply a question of time for the indigenous firms to overcome their  
33  
34 initial backwardness? Or must the Czech government embark on voluntary policies by using  
35  
36 carrots and sticks? Should they put the emphasis on the improvement of the local Research &  
37  
38 development potential, on the development of the specific capabilities of the human resources  
39  
40 in the automotive activities or on the creation of clusters?  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52

## 53 REFERENCES

54  
55  
56  
57 AOKI M. (1988) *Information, Incentives and Bargaining in the Japanese Economy*,  
58  
59 Cambridge University Press, Cambridge, MA.  
60

- BARNES J. and KAPLINSKY R. (2000) Globalization and the Death of the Local Firms? The Automobile Component Sector in South Africa, *Regional Studies* 34(9), 797-812.
- BATTAT J., FRANK I. and SHEN X. (1996) Suppliers to Multinationals- Linkage Programs to Strengthen Local Companies in Developing Countries, *Foreign Investment Advisory Service Occasional Paper* 6, The World Bank, Washington, D.C.
- BERNARD A.B. and SJÖHOLM F. (2003) Foreign Owners and Plant Survival, *NBER Working Paper* 10039, NBER, Cambridge, MA.
- BEST M. (1990) *The New Competition: Institutions of Industrial Restructuring*, Padstow, Cornwall, T.J. Press, UK.
- CARRILLO J. and GOMIS R. (2001) Challenge for Maquiladoras Given the Loss of Competitiveness, *Comercio Exterior* 53(4), Mexico.
- CESKA NARODNI BANKA (2000) *Foreign Direct Investment*, Prague.
- CESKA NARODNI BANKA (2007) *Foreign Direct Investment*, Prague.
- COURTAUX-KOTBI G. (2005) Modèles productifs et variété du capitalisme : le cas des secteurs automobiles tchèque et est-allemand, *Actes du GERPISA* 39, Université d'Evry-Val d'Essone.
- CZECHINVEST (2007) *Investment Opportunities – Automotive Industry in the Czech Republic*, Prague, <http://automotive.czechinvest.org> (Last access: September 2008).
- CZECHINVEST (2008) *Database of car components producers in the Czech Republic*, Prague, <http://automotive.czechinvest.org> (Last access: March 2008).
- DELOITTE (2007) *Top 500 Companies in Central and East Europe* 12/9, Deloitte Central Europe.
- DICKEN P. (1988) *Global Shift: Industrial Change in a Turbulent World*, P. Chapman Pub., London.

- 1  
2  
3 ECONOMIC COMMISSION FOR EUROPE (1994) *Economic Survey of Europe in 1993-*  
4  
5 *1994*, United Nations, New York.  
6  
7  
8 FAVA V. (2005) In Search of a Czechoslovak People's Car -Skoda Auto and the Soviet  
9  
10 Model of Management, *Actes du GERPISA* 39, Université d'Evry-Val d'Essone.  
11  
12  
13 FRIGANT V. and LUNG Y. (2001) Geographical Proximity and Supplying Relationship in  
14  
15 Modular Production, *Actes du GERPISA* 34, Université d'Evry-Val d'Essone.  
16  
17  
18 GEREFFI G. (1999) International Trade and Industrial Upgrading in the Apparel Commodity  
19  
20 Chain, *Journal of International Economics* 48, 37-70.  
21  
22  
23 GILLY J-P. and TORRE A. Eds (2000) *Dynamiques de proximité*, L'Harmattan, Paris.  
24  
25  
26 GOLUB S. (2003) Measures of Restrictions on Inward Foreign Direct Investment for OECD  
27  
28 Countries, *OECD Economic Studies* 36, Paris.  
29  
30  
31 GÖRG H. and STROBL E. (2003) Footloose Multinationals? *The Manchester School* 71(1),  
32  
33 1-19.  
34  
35  
36 HAVAS A. (2004) Buyer-supplier Relationships in the Hungarian Automotive Industry and  
37  
38 Prospects for the Suppliers, *12th GERPISA International Colloquium* 9-11 June, Paris.  
39  
40  
41 HELPER S. (1990) Strategy and Irreversibility in Supplier Relations: The Case of the U.S.  
42  
43 Automobile Industry, *Business History Review* 65, 781-824.  
44  
45  
46 HELPER S. and SAKO M. (1995) Supplier Relations in Japan and the United States: Are  
47  
48 they Converging? *Sloan Management Review* 36(3), 77-84.  
49  
50  
51 HIRSCHMAN A.O. (1970) *Exit, Voice and Loyalty: Responses to Decline in Firms*  
52  
53 *Organizations and States*, Harvard University Press, Cambridge, MA.  
54  
55  
56 ICKES B. and RYTERMAN R. (1993) From Enterprise to Firm: Notes for a Theory of the  
57  
58 Enterprise in Transition, in CAMPBELL R. and BRZESKI A. (Eds) *The Transformation of*  
59  
60 *Centrally Planned Economies*, Westview Press, New York.

- INTERNATIONAL ORGANIZATION OF MOTOR VEHICLE MANUFACTURERS (OICA) (2008) *Production Statistics*, [www.oica.net](http://www.oica.net) (Last access: March 2008).
- JAVORCIK B. (2004) Does Foreign Direct Investment Increase the Productivity of Domestic Firms? In Search of Spillovers through Backward Linkages, *American Economic Review* 94, 605-627.
- KOYAMA T. and GOLUB S. (2006) OECD's Regulatory Restrictiveness Index: Revision and Extension to More Economies, *OECD Working Paper* 4, Paris.
- KRISTENSEN P.H. and ZEITLIN J. (2005) *Local Players in Global Games: the Strategic Constitution of Multinational Corporations*, Oxford University Press, Oxford, New York.
- LAYAN J-B. (2003) L'intérêt stratégique des périphéries du système automobile européen, *Actes du GERPISA* 35, Université d'Evry-Val d'Essone.
- LUNG Y. (2003) The Changing Geography of the Automobile System, *Actes du GERPISA* 35, Université d'Evry-Val d'Essone.
- MARKUSEN J. and VENABLES A. (1999) Foreign Direct Investment as a Catalyst for Industrial Development, *European Economic Review* 43, 335-356.
- MINISTRY OF INDUSTRY AND TRADE (2001) *Panorama of the Czech Industry 2000*, Prague.
- MINISTRY OF INDUSTRY AND TRADE (2007) *Panorama of the Czech Industry 2006*, Prague.
- ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (OECD) (1998) *Economic Surveys: Czech Republic 1997/1998*, OECD Publishing, Paris.
- ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (2005) *Economic Policy Reform –Going for Growth, Chapter 4: Product Market Regulation in OECD Countries: 1998 to 2003*, OECD Publishing, Paris.

- PAVLINEK P. (2002) The Role of Foreign Direct Investment in the Privatization and Restructuring of the Czech Motor Industry, *Post-Communist Economies* 14(3), 359-379.
- PAVLINEK P. (2003) Transformation of the Czech Automotive Components Industry Through Foreign Direct Investment, *Eurasian Geography and Economics* 44(3), 184-209,
- PAVLINEK P. (2005) Transformation of the Central and East European Car Passenger Industry: Selective Peripheral Integration through Foreign Direct Investment, in TURNOCK D. (Ed) *Foreign Direct Investment and Regional Development in East Central Europe and the Former Soviet Union*, pp. 71-102. Ashgate, London.
- PRAHALAD C. and HAMEL G. (1990) The Core Competencies of the Corporation, *Harvard Business Review* 3, 79-91.
- RICHARDSON G. (1972) The Organization of Industry, *Economic Journal* 327(82), 883-896.
- RODRIGUEZ-CLARE A. (1996) Multinationals Linkages and Economic Development, *American Economic Review* 86(4), 852-873.
- RUGRAFF E., SANCHEZ-ANCOCHEA D. and SUMNER A. Eds. (2009) *Transnational Corporations and Development Policy - Critical Perspectives*, Palgrave, Basingstoke.
- SALERNO M-S., ZILBOVICIUS M., ARBIX G. and CARNEIRO DIAS A.V. (1998) Changes and Persistence on the Relationship between Assemblers and Suppliers in Brazil, *Actes du GERPISA* 35, Université d'Evry-Val d'Essone.
- SKODA AUTO (1993 to 2006) *Annual Reports* <http://new.skoda-auto.com/Documents/AnnualReports> (Last access: March 2008).
- STURGEON T.J. and LESTER R.K. (2003) The New Global Supply-Base: New Challenges for Local Suppliers in East Asia, *MIT Special Working Papers Series* 03-006, MIT Industrial Performance Center.

TOYOTA-PEUGEOT CITROËN AUTOMOBILE (TPCA) (2006) *Annual Report*,  
<http://www.tpca.cz/en> (Last access: March 2008).

UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT (UNCTAD)  
 (2001) *World Investment Report: Promoting Linkages*, United Nations, New York.

VAN TULDER R. and RUIGROK W. (1998) European Cross-National Production Networks  
 in the Auto Industry: Eastern Europe as the Low End of European Car Complex, *Berkeley  
 Roundtable on the International Economy* 121, University of California, Berkeley.

VOLPATO G. (2003) The OEM-FTS Relationship, *Actes du GERPISA* 35, Université d'Evry-  
 Val d'Essone.

WOMACK J.P., JONES D.T. and ROOS D. (1990) *The Machine that Changed the World:  
 the Story of Lean Production*, Harper, New York.

---

<sup>1</sup> Since the end of the 1990s the Czech Republic has had a lower index of FDI restrictions than  
 the average OECD countries (for the scoring system, methodology and weighting scheme of  
 the 'restrictiveness indicator', see GOLUB, 2003; KOYAMA and GOLUB, 2006).

<sup>2</sup> Inter-sectoral comparisons make no sense: the idiosyncratic characteristics of the automotive  
 industry explain that motor vehicle manufacturers source more locally when they invest in  
 developing countries and transition countries than foreign-owned multinational subsidiaries of  
 other industries used to do on average (for examples of the local content in other industries,  
 see BATTAT et al., 1996; UNCTAD, 2001, p.134-5; RUGRAFF et al., 2009).

<sup>3</sup> In our definition, foreign-owned companies are corporations with a foreign person or a  
 conglomerate owning more than 50% of the outstanding shares.

<sup>4</sup> For an insight into the main strategic, organizational and technological shifts in the motor  
 vehicle industry over the last 20 years, see the websites of the Industrial Performance Center  
 (IPC) of the Massachusetts Institute of Technology (<http://web.mit.edu/ipc>) and of the GERPISA



1  
2  
3  
4 international network -Permanent group for the study of the automotive industry and its  
5  
6 employees- ([www.gerpisa.univ-evry.fr](http://www.gerpisa.univ-evry.fr)).  
7  
8

9 <sup>5</sup> Most of the Czech-owned companies are certified under the German standard DIN EN ISO  
10  
11 9001 complemented with the requirements of the automotive industry VDA 6.1 and the  
12  
13 American standard QS-9000.  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60



Table 1. The Top ten companies in the Czech motor vehicle industry, 2006

Company	Nationality of the owner	Activity	Turnover € billion	Employment	Motor vehicle production
Skoda (VW Group)	Germany	manufacturer	7,375	23 304	556 375
Toyota-Peugeot Citroën Auto	Japan/France	manufacturer	1,764	3278	193 207
Barum	Germany	Supplier	1,536	4448	/
Continental Bosch Diesel	Germany	Supplier	0,803	6185	/
Johnson Controls	USA	Supplier	0,666	3500*	/
Visteon-Autopal	USA	Supplier	0,425	4318	/
Continental	Germany	Supplier	0,417	361*	/
Siemens VDO	Germany	Supplier	0,406	2655	/
Valeo	France	Supplier	0,371	112*	/
Continental Teves	Germany	Supplier	0,357*	1312*	/

Note: \* in 2005.

Sources: Compiled by the author from DELOITTE (2007) and from INTERNATIONAL ORGANIZATION OF MOTOR VEHICLE MANUFACTURERS (2008).

Table 2. Production indicators of the Czech motor vehicle industry

	Manufacture of motor vehicles and engines NACE 34.1	Manufacture of auto-parts NACE 34.3	Total NACE 34
Employees			
1994	34 548	23 099	61 180
2000	31 417	44 751	78 676
2006	31 227	73 857	110 478
Value added (1994=100; current prices)			
1994	100	100	100
2000	353	535	415
2006	647	1300	890
Net balance (current prices, CZK million)			
1995	-80	1017	1411
2000	55 664	17 829	77 556
2006	108 478	63 047	175 163

Notes: NACE 34 is composed of NACE 34.1, NACE 34.2 (manufacture of bodies for motor vehicles, trailers and semi-trailers) and NACE 34.3; CZK: Czech Koruna.

Sources: MINISTRY OF INDUSTRY AND TRADE (2001, 2007).

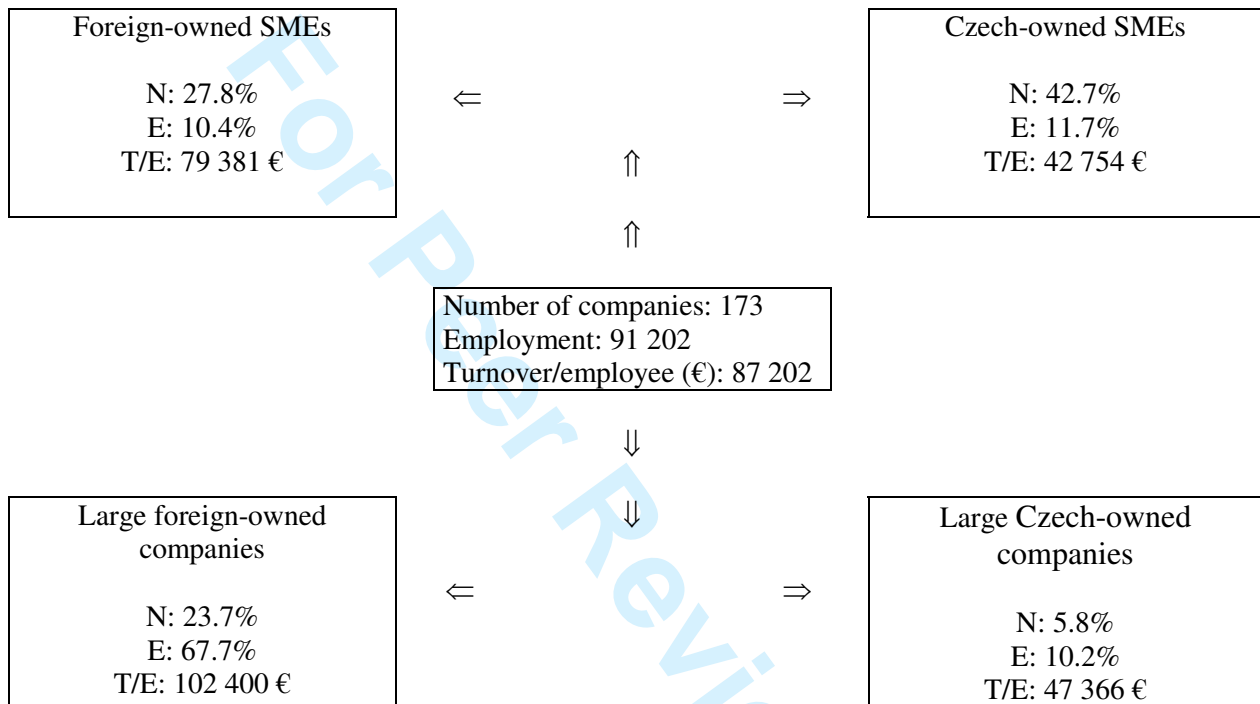
Table 3. Comparison of the world performances of the two major foreign-owned suppliers and the ten major Czech-owned suppliers, 2006

	Turnover € billion	Employment	R&D expenditures/ sales	Production facilities abroad	Production of parts (P) or systems (S)
The two major foreign-owned companies					
Bosch AG Automotive system division	27,220	150 000	10.1%	120	S (electrical steering systems, braking systems)
Continental AG Automotive system division	5,994	30 220	8.0%	36	S (safety systems, powertrain & chassis)
The ten major Czech-owned suppliers					
Brano Group	0,152	2424	154 employees	0	P (Door parts, plastics parts, tools)
Fatra (Agrofert)	0,110	1800	/	0	P (PVC belts, PVC granulates)
Karsit*	0,070	800	/	2	P (Body spare parts)
Kovolit	0,038	650	/	0	P (Tools, metal parts)
Isolit-Bravo	0,035	550	/	0	P (Moulding)
Plastik HT	0,030	550	/	0	P (Tools, mould from plastic)
Massag**	0,029	546	42 employees	0	P (tools)
Brisk	0,025	750	80 employees	0	P (Spark plugs, ignition electrodes, sensors)
Kdynium	0,020	610	/	0	P (Tools)
Spokar*	0,020	500	/	0	P (Brushes, injection- moulding)

Note: \*2003-2004; \*\*2005.

Sources: own calculation based on CZECHINVEST (2008) and compilation from the Annual Reports of the 12 companies.

Figure 1. The automotive component ‘first-tier’ suppliers in the Czech Republic, mid-2000



Note: Large foreign-owned companies (over 500 employees) represent 23.7% of the component ‘first-tier’ suppliers, 67.7% of the total employment and their turnover per employee amounts to 102 400€.

Sources: own calculation based on (CZECHINVEST, 2008) and compilation from Annual Reports of the companies.